WHAT IS CLAIMED IS:

1. A three dimensional conical horn antenna coupled image detector comprising:

a plurality of supports 30a, 30b for supporting a horn antenna structure 20 on the upper section of a substrate 10;

a horn antenna waveguide 25 formed at the center of said horn antenna structure 20;

an image detector 40 at the lower section of said horn antenna wave guide 25;

an absorption layer 50 in said image detector 40 which has an identical width to that of said horn antenna waveguide 25; and

a thermal isolation leg 60 in said image detector 40 which has a larger width to that of said horn antenna wave guide 25.

2. The image detector as claimed in claim 1, wherein said thermal isolation leg 60 is manufactured in a circular shape in order to be capable of increasing the length of the leg.

3. A manufacturing method for a three dimensional conical horn antenna coupled image detector

comprising:

a deposition step where a sacrificial layer is deposited on the upper section of the substrate;

a pattern forming step where a pattern for said sacrificial layer is formed by performing a patterning process using the first etching mask;

a deposition step where a first silicon nitride layer is formed on the whole surface of the products from the previous steps;

a pattern forming step where a pattern for said first silicon nitride layer is formed by performing a patterning process using the second etching mask;

a deposition step where a vanadium oxide layer is deposited on the whole surface of the products from the previous steps;

a pattern forming step where a pattern for said vanadium oxide layer is formed by performing a patterning process using the third etching mask;

a deposition step where a conductive layer is deposited on the whole surface of the products from the previous steps;

a pattern forming step where a pattern for said conductive layer is formed by performing a patterning process using the fourth etching mask;

a deposition step where a second silicon nitride

layer is deposited on the whole surface of the products from the previous steps;

a pattern forming step where a pattern for said second silicon nitride layer is formed by performing a patterning process using the fifth etching mask;

a deposition step where a third silicon nitride layer is deposited on the whole surface of the products from the previous steps;

a pattern forming step where a pattern for a side wall space is formed by performing a patterning process using the sixth etching mask; and

an aligning step where after said sacrificial layer is removed from the products from the previous steps, an aligning process is performed using the seventh etching mask.

4. The method as claimed in claim 3, wherein said sacrificial layer is a polyimide layer with a thickness between 2.0 and 2.5 μm.

5. The method as claimed in claim 3 or 4, wherein the pattern size of said sacrificial layer is identical to the external diameter of the thermal isolation leg 60 of the image detector 40.

6. The method as claimed in claim 3, wherein the pattern size of said vanadium oxide layer is identical to the diameter of the absorption layer 50 of the image detector 40.

7. The method as claimed in claim 3, wherein only the region around said conductive layer corresponding to the absorption layer 50 of the image detector 40 is removed by etching.